

# SOLAR ECLIPSE NEWSLETTER

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### **The Solar Eclipse Mailing List**

The Solar Eclipse Mailing List (SEML) is an electronic newsgroup dedicated to Solar Eclipses. Published by eclipse chaser Patrick Poitevin (patrick\_poitevin@hotmail.com), it is a forum for discussing anything and everything about eclipses.

Thanks to the voluntary efforts of Jan Van Gestel of Geel, Belgium, the Solar Eclipse Mailing List (listserv) has been in operation since 10 December 1997. This is the first mailing list devoted solely to topic of solar eclipses on the internet.

You can send an e-mail message to the list server solareclipses@Aula.com, which will then forward your e-mail to all the subscribers on the list. Likewise, you'll receive email messages that other subscribers send to the listserv. Only subscribers can send messages.

## **Solar Eclipse Mailing List**



Dear Eclipse Chasers

Well this issue celebrates the fifth birthday of the newsletter. We would love to hear your views, on how see and use the newsletter. Do you find it a valuable resource, is it easy to download, do you use it as a reference regularly, or would you like to other material in there? Again, we would love to hear your views and comments. We hope that you find the publisher format user friendly, if not let us know. However, I'm sure you will all agree that the newsletter is thanks to Patrick who five years ago started the newsletter, which acts as a archive for solar eclipse related information.

The bulk of the newsletter comes from the solar eclipse mailing list, but Patrick also sources other information from other mailing list, and in fact from any other pieces picked up along the way. In fact his devotion to the newsletter is amazing. So we really hope you enjoy.

In this edition we also look forward to future eclipses. We wish clear skies to everyone lucky enough to be going to Costa Rica, good wishes, and luck, and happy annular. There's of course Mexico next year, and then the central in Africa and Australia. I'm sure the activity of the newsletter will increase as each one of these events approaches.

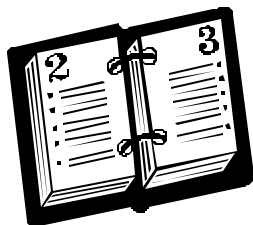
Africa provided so many lovely memories for us, and I'm sure for all of you too. Highlights included of course the eclipse in perfect blue skies, Zebras around the tents early in the morning, Hippos around the tents on safari, elephant rides, the mist above the falls, and for us viewing with a group and the kids. We are really looking forward to December 2002.

Best regards

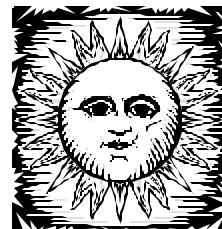
Joanne & Patrick



## ECLIPSE CALENDAR



### NOVEMBER 2001



Dear All,

Please find herewith the solar eclipse calendar for November. If you have any additional information, queries or remarks, please drop me a mail.

**November 01 2282** Three eclipses in one month. 2282 Nov 01 Partial Solar Eclipse, 2282 Nov 16 Total Lunar Eclipse, 2282 Nov 30 Partial Solar Eclipse. (Ref. SEML 06/00)

**November 01, 1858** Birth of Gustav von Struve, Russian astronomer. Contributed in statistical astronomy and sun. Same family name of other family members. Died in 1920. (Ref. DD11/99)

**November 01, 1905** Minor planet (1967) Menzel A905 VC. Discovered 1905 November 1 by M. Wolf at Heidelberg. Named in honor of Donald Howard Menzel (1901-1976), Harvard astronomer since 1932 and director of the Harvard College Observatory from 1954 to 1966. Both a theoretical and observational pioneering solar and stellar astrophysicist, he calculated atomic transition probabilities, chemically analysed stars and nebulae, and made fundamental contributions to our understanding of physical processes in gaseous nebulae, the solar chromosphere, and interpretation of stellar spectra. He observed 15 solar eclipses, determined spectroscopically the rotation rates of Uranus and Neptune and helped educate a number of prominent astronomers. On the lighter side he is well known for his doodling and for debunking of UFO's. (M 4158) Obituaries published in *Astronomie*, Vol. 91, p. 50 (1977); *Nature*, Vol. 267, p. 189 (1977); *Phys. Today*, Vol. 30, No. 5, p. 96, 98 (1977); *Sky Telesc.*, Vol. 53, p. 244-251 (1977). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 01, 1948** The Eclipse Comet only 2 degrees from the Sun and observed during totality in Nairobi, Kenya. Photographed by R. d' E. Atkinson. After, the comet was observed till April 3, 1949 in the southern hemisphere.

**November 01, 1982** Death of Dutch astronomer Jakob Houtgast (Assen 1908 - 1982 Utrecht). Houtgast worked on the Observatory of Utrecht, Netherlands and was specialist in the Sun and joined a lot of Solar Eclipse expeditions. (Ref. Heelal 12/82)

**November 01, 1994** Launch of Wind (US). Research of Solarwind, together with Polar and Fast. (ref. DD 10/98)

**November 02, 1875** Minor Planet (153) Hilda Discovered 1875 November 2 by J. Palisa at Pola. Named in honor of (probably the eldest) daughter of the Austrian astronomer Theodor von Oppolzer (1841-1886) {see planet (1492)}. She died some years prior to her father. (*Vierteljahrsschr. Astron. Ges.*, 22. Jahrg., p. 191 (1887)) Named by Th. von Oppolzer. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 03, 1994** Total solar eclipse observed with success by most observers in Chili and Bolivia.

**November 03, 2013** Annular-total solar eclipse which will be annular in the beginning and total for the rest of the path. Between 1898 and 2510, there are only a few cases: 3 November 2013, 17 October 2172 and 29 April 2386. Ref. Canon of Solar Eclipses, 1898-2510 by Meeus, Grosjean and Vanderleen (p. 76).

**November 04, 1920** Gustav von Struve, Russian astronomer died. Contributed in statistical astronomy and sun. Same family name of other family members. Born in 1858.

**November 04, 1983** Minor Planet (3841) Dedicco 1983 VG7. Discovered 1983 November 4 by B. A. Skiff at Anderson Mesa.

(Continued on page 3)

## ECLIPSE CALENDAR

Named in honor of Dennis di Cicco, since 1974 a staff member and since 1983 an associate editor of Sky and Telescope. An imaginative and outstanding astrophotographer, he has participated in many expeditions, specifically to observe eclipses and comets, although his best-known work is probably the analemma showing the Sun from the same spot at the same mean time every few days throughout the year. Particularly meticulous and appropriately cautions in all his writings, he regularly conducts the 'Observers Page' column in the magazine. (M 16246) Citation prepared by B. G. Marsden at the request of the discoverer. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 04, 1988** Minor Planet (5869) Tanith 1988 VN<sub>4</sub>. Discovered 1988 November 4 by C. S. Shoemaker and E. M. Shoemaker at Palomar. Seen as a heavenly goddess by the conquering Romans who called her Caelestis, Tanith was worshipped by the Carthaginians. This winged sky-goddess of the Punic people wore a zodiac around her head and held the sun and moon in either hand. (M 24918) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 05, 1983** Minor Planet (3744) Horn-d'Arturo 1983 VE. Discovered 1983 November 5 at the Osservatorio San Vittore at Bologna. Named in memory of Guido Horn-d'Arturo (1879-1967), director of the Bologna Observatory for almost half a century and a talented astronomer far ahead of his time. A pioneer in the design and construction of multiple-mirror telescopes, he designed and utilized the world's first such instrument, a 1.80-m zenith telescope at Bologna. In the 1920s he correctly interpreted the shadow-band phenomenon and attributed an important component of stellar scintillation to currents in the Earth's stratosphere. Following a suggestion by Luigi Jacchia {see planet (2079)}, he founded the magazine Coelum in 1931. (M 13178) Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 07, 1631** Pierre Gassendi, Wilhelm Schickard, Johannes Hevelius and Johannes Kepler observed for the first time a Transit of Mercury. The two late also predicted the event. Martin van den Hove wrote a book about it. (Ref. DD11/99)

**November 07, 1953** Minor planet (1764) Cogshall 1953 VM<sub>1</sub>. Discovered 1953 November 7 at the Goethe Link Observatory at Brooklyn, Indiana. Named in honor of W. A. Cogshall, professor of astronomy at Indiana University (1900-44). He was known for his work on visual binary stars, photography of solar eclipses, and as a teacher of many who followed professional careers in astronomy. (M 3143) Proposed by F. K. Edmondson. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 08, 1656** Edmond Halley (1656-1742 or 1743) born on November 08, 1656. Famous for his comet but also for his first observations on Baily's beads. The Royal Society also mentioned 29 October 1656. (Ref. Rc1999). Due to the Julian-Gregorian calendar change, the 8th of November 1656 in France was the 29th of October 1656 in England. (Ref. Michel Andre Levy 10/00).

**November 09, 1853** Carrington Rotation number 1 starts and initiated by R.C. Carrington.



**November 11, 0923** "(This) solar eclipse was calculated and observed by Abu al-Hassan Ali ibn Amajur, who used the al-Zij al-Arabi of Habash . . . We as a group observed and clearly distinguished it . . . We observed this eclipse at several sites on the Tarmah (an elevated platform on the outside of the building) . . . According to calculation from the conjunction tables in the habash Zij the middle was at 0;31 h (i.e. 31 min) and its clearance at 0;44 hours (i.e. 44 min), calculation being in advance of observation." Refers to a solar eclipse of 11 November AD 923. From: Ibn Yunus. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 459.

**November 11, 1969** Minor planet (2385) Mustel 1969 VW. Discovered 1969 November 11 by L. I. Chernykh at Nauchnyj. Named in honor of Evald Rudolfovich Mustel' {1911-1988}, chairman of the Astronomical Council of the U.S.S.R. Academy of Sciences, editor of the Astronomicheskij Zhurnal, and a vice-president of the IAU during 1970-1976. His research activities involve several aspects of solar and stellar physics and the correlation of geophysical phenomena and solar activity. (M 7617) Obituaries published in Astron. Zh., Tom 65, Vyp. 4, p. 891-892 (1988); Pis'ma Astron. Zh., Tom 14, No. 8, p. 764 (1988); Zemlya Vselennaya, No. 5, p. 42-45 (1988); Astrophys. Space Sci., Vol. 155, No. 1, p. 1 (1989); Sov. Astron. Lett., Vol. 14, No. 4, p.

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## ECLIPSE CALENDAR

326 (1988); Sov. Astron., Vol. 32, No. 4, p. 466-467 (1988). Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November 12, 1547** Extremely wide path of the annular eclipse of 12 November 1547. The path is 1400 kilometers wide. The northern limit is only a small circle between Normay and Iceland. The paths covers nearly whole Great Britain. (Ref. St L 06/99)

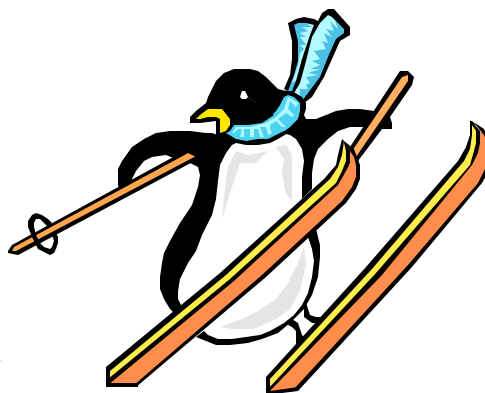
**November 12, 1891** Birth of Seth B. Nicholson, American Astronomer. His main task was observing the sun. He published yearly, and for decades, reports about sunspots and magnetic fields. He died in 1963. (Ref. DD11/99)

**November 12, 1966** On November 12 th 1966 total solar eclipse, Gemini 12 astronauts Lovell and Aldrin saw the eclipse from orbit and they saw the moon shadow on earth surface. For them totality lasted only 6 sec. Lift-off of Titan booster have been synchronized in order to intercept that total eclipse that was visible from south America. (Ref. PA07/98)

**November 12, 1985** Total solar eclipse on the Antarctic and of which the northern limit was more to the south then the southern limit of the eclipse.

**November 14, 1659** In Chapter VII of "A Handbook of Solar Eclipses" by Isabel M. Lewis which was written in advance of the 1925 eclipse over NE USA, Lewis identifies the eclipses of November 14, 1659, August 22, 1672, July 12, 1684 (AT), and January 19, 1768 (AT) as having occurred in the years that elapsed since the Pelgrim fathers landed in New England. (Ref. ENB012)

**November 17, 1183** ". . . the Minamoto army fled, frightened by a solar eclipse." Refers to an annular eclipse of 17 November 1183. From: Gehpei sei-seiki (Japanese history of the Minamoto and Taira clans). Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 266.



**November 20, -0128** (129 BC) "Hipparchus tries to demonstrate the Moon's distance by guessing at the Sun's. First he supposes that the Sun has the least perceptible parallax, in order to find its distance, and then he uses the solar eclipse which he adduces; at one time he assumed that the Sun has no perceptible parallax, at another that it has a parallax big enough [to be observed]. As a result, the ratio of the Moon's distance came out different for him for each of the hypotheses he put forward; for it is altogether uncertain in the case of the Sun, not only how great its parallax is, but even whether it has any parallax at all." From: Ptolemy, Almagest, V, 11. "So Hipparchus, being uncertain concerning the Sun, not only how great a parallax it has but whether it has any parallax at all, assumed in his first book of 'On Sizes and Distances' that the Earth has the ratio of a point and centre to the Sun [i.e. the Sun's sphere]. And at one time using the eclipse he adduced, he assumed that it had the least parallax, and at another time a greater parallax. Hence the ratios of the Moon's distances came out different. For in Book 1 of 'On Sizes and Distances' he takes the following observation: an eclipse of the Sun, which in the Hellespontine region was an exact eclipse of the whole Sun, such that no part of it was visible, but at Alexandria in Egypt approximately four-fifths of the diameter was eclipsed. By means of the above he shows in Book 1 that, in units of which the radius of the Earth is one, the least distance of the Moon is 71, and the greatest 83. Hence the mean is 77. . . Then again he himself in Book 2 of 'On Sizes and Distances' shows from many considerations that, in units of which the radius of the Earth is one, the least distance of the Moon is 62, the mean 67-1/3 and the Sun's distance 490. It is clear that the greatest distance of the Moon will be 72-2/3." From: Pappus, Commentary on the Almagest "Moreover, such an observation has been made in the case of an eclipse of the Sun. Once the Sun was wholly eclipsed in the Hellespont, it was observed in Alexandria to be eclipsed except for the fifth part of its diameter, which is, according to the sight, except for two digits and a little more. . . Now since it is 5000 stades from Alexandria to Rhodes; besides, proceeding hence to the Hellespont, this will also decrease in proportion, since when the Hellespont is reached, it will entirely vanish." From: Cleomedes, De Motu Circularis Corporum, II, 3. These three quotations probably refer to a total solar eclipse of 20 November 129 BC. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 351.

**November 22, 1972** Launch of ESRO 4 (ESA), studied atmosphere and solarwind. (Ref. DD11/99)

(Continued on page 5)



## ECLIPSE CALENDAR

**November 22, 1984** Total solar eclipse in a part of New Guinea and only 18 lunations (1 ½ year) after the total solar eclipse of 11 June 1983 which was also visible from that part. One Saros later on 21 June 2001 and 4 December 2002 a small part of Angola will witness a total solar eclipse. (Ref. JM09/99)

**November 24, 0029** "And Phlegon also who compiled the Olympiads writes about the same things in his 13th book in the following words: 'In the fourth year of the 202nd Olympiad (AD 32-33), and eclipse of the Sun took place greater than any previously known, and night came on at the sixth hour of the day, so that stars actually appeared in the sky; and a great earthquake took place in Bithynia and overthrew the greater part of Niceaea.'" Possibly refers to a total solar eclipse of 24 November AD 29, the reference to AD32-33 being incorrect. From: Phlegon, Olympiades, fragment 17. Quoted in Historical Eclipses and Earth's Rotation, by F Richard Stephenson, Cambridge University Press, 1997, page 359.

**November 24, 0029** "I will show portents in the sky and on earth, blood and fire and columns of smoke; the sun shall be turned into darkness and the moon into blood before the great and terrible day of the Lord comes." Joel, Chapter 2, verses 30, 31 (Old Testament). "And I will show portents in the sky above, and signs on the earth below - blood and fire and drifting smoke. The Sun shall be turned to darkness, and the moon to blood, before that great, resplendent day, the day of the Lord, shall come." Peter in Acts of the Apostles This reference to a blood-red Moon, and the following references in the Gospels to a darkening sky, have been interpreted as placing the date of the crucifixion to 24 November AD 29, when there was an eclipse of the Sun, or Friday, 3 April AD 33, when there was a partial eclipse of the Moon over Jerusalem. Ref FE 01/01

**November 24, 1989** Solar Maximum Mission (SMM - US) stopped. Performed 9 years observations of the sun. In 1984 in de shuttle repaired. (ref. DD11/99)

**November 25, 1995** The first DDD (De Duistere Dag or The Dark Day), organized by the Solar Eclipse Section (Patrick Poitevin), VVS Belgium in Volkssterrenwacht Mira in Grimbergen, Belgium. Speakers where Jean Meeus (triangles and eclipses), Felix Verbelen and Anton Vollemaere (Codex: Eclipses and Maya's) and Patrick Poitevin (Eclipse November 03, 1995).

**November 28, 1883** Minor Planet (235) Carolina Discovered 1883 November 28 by J. Palisa at Vienna. Named for an atoll of the Line Islands, 450 miles northwest of Papeete, Tahiti, where the discoverer observed the solar eclipse of May 6, 1883. Palisa observed the solar neighborhood in order to find an intra-Mercurian planet. (H 28) Named by the discoverer (BAJ Circ., No. 218 (1883)) in remembrance of his voyage to this island. Dictionary of Minor Planet Names - ISBN 3-540-14814-0 - Copyright © 1999 by Springer-Verlag Berlin Heidelberg

**November, 1996** First issue of the Eclips Nieuwsbrief (Eclipse Newsletter). Monthly magazine of the Solar Eclipse Section, VVS Belgium. Editor and founder Patrick Poitevin. Patrick continued the SENL (Solar Eclipse Newsletter) after leaving the Solar Eclipse Section and edited the SENL with partner Joanne Edmonds. The SENL issues can be downloaded (free of charge) from the webpages of Fred Espenak.

and ... keep those solar eclipse related messages coming ...

Best regards,

Patrick

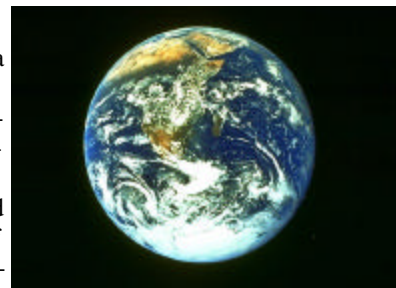


## GENERAL TOPICS

From Bradley E. Schaefer To HASTRO Date 30 September 2001 RE **How to confirm a crescent sighting**

Hi; You have raised an important question, that is "How can a claimed sighting of the thin crescent Moon be 'confirmed'?" This is an important question for modern Islam as well as for astronomers or scholars interested in very young crescent moons. For Islam, this question is repeated raised every year at the start and end of Ramadan, and has frequently lead to widespread disputes and confusions. A symptom of this is that the \*majority\* of Ramadans in the last fifty years (for the several countries examined) have started and stopped based on claimed sightings of the Moon at a time \*before\* conjunction. This problem is not special to Islam, but is omnipresent amongst all groups (such as amateur astronomers and scholars of Jewish calendrics) interested in the question.

As an astronomer who checks records closely, I have developed a variety of criteria for accepting a sighting (see Schaefer, Ahmad, & Doggett, "Records for Young Moon Sightings", 1993, QJRAS, v34, pp53-56). I require (a) correct time of observation, (b) correct description [including orientation of the horns], (c) prompt reporting, (d) adequate preparation, (e) an experienced observer. These criteria change somewhat with circumstances, for example d&e are relaxed for a rather old crescent and for example an acceptable report might have no recorded times of visibility. Item a is often failed by laymen looking at the wrong time, item b is usually wrong for misidentified objects, item c helps cover the case of stating a wrong date, while items d&e are essential for any very young Moon sighting. For historical reports, I have also checked for date mistakes by getting old weather records.



The Islamic community has evolved a similar set of criteria, with emphasis on items a and b. In America, the ISNA committee people and other veteran workers (e.g., Drs. Afzal, Ahmad) have always been reliable. An observation meeting these criteria is still not guaranteed to be a valid sighting, but the odds are pretty good that it is correct. Most of the records that I acknowledge have had multiple observers, and so this adds to the credibility in those cases. Also, all the records have very detailed reports, and it is nearly impossible for an observer to get all the details right should the observation be invalid. So, in all, I have strong confidence in the record young crescents. Cheers, Brad Schaefer, schaefer@astro.as.utexas.edu

From Daniel Fischer To SEMML Date 07.10.01 Re **Cosmic Mirror**

Five years ago this month, on October 10, 1996, the "Cosmic Mirror" was born, an astronomical news service that has always paid special attention to solar eclipses and meteor events (storms especially) - check out [www.geocities.com/skyweek/mirror1-10.html](http://www.geocities.com/skyweek/mirror1-10.html) for the humble beginnings and [www.geocities.com/skyweek/mirror](http://www.geocities.com/skyweek/mirror) for the current issue, the 229th. Daniel Fischer

From Jean Meeus Date 12.10.01

On 2001 September 1, the value of **Delta T** was 64.21 seconds. Delta T, a quantity needed in some astronomical calculations, is the difference between Dynamical Time and Universal Time.

The International Earth Rotation Service, Paris, mentions that no leap second will be introduced in UTC on 2001 December 31. Jean Meeus

From : "Chris O'Byrne" <[obyrne@iol.ie](mailto:obyrne@iol.ie)> To : SOLARECLIPSES@AULA.COM Subject : [SE]

**Eclipse calculator updated** Date : Wed, 31 Oct 2001 12:34:48 -0000

Folks, I've updated my eclipse calculator at <http://www.chris.obyrne.com/Eclipses/calculator.html>

so that it now does calculations for the 2002 Dec 4 eclipse.

Please consider the calculator to be in testing at the moment - if you find a bug, please let me know.

I will be adding things like lunar limb corrections, centre line range and direction finder, and maybe countdown clocks, so "watch this space"! Chris.

From Ron Baalke To HASTRO Date 02.10.01 RE

### **Farthest solar array spacecraft**

Hi, Anybody know which spacecraft with solar arrays has operated the furthest from the Sun? I think Stardust now holds that distinction, but I want to be sure. Ron Baalke

## GENERAL TOPICS

From : KCStarguy@aol.com To : SOLARECLIPSES@aula.com Subject : [SE] **darkest eclipse and best** Date : Sat, 27 Oct 2001 14:19:20 EDT

The darkest eclipse I have seen I think was 1972 in Arasaig , Nova Scotia. I could not see my camera dial settings. I remember that real easily.

I could see my settings easily in Africa aboard the Canberra 1973 and 1979 near Winnipeg was not that dark. The gold color on the snow and the shadows before totality were remarkable in 1979.

2001 was medium darkenss but I could see Jupiter real easily. 1999 I think was darker but I could not quite make out dial setting on camcorder. 1998 could see Venus easily.

1991 I could not really tell as the eclipse was mostly seen through holes in the clouds.

My favorite eclipse was 1999 and videotaping the incoming shadow. Everything went perfect. I did not get a good look at ring of fire (I was too busy) but most people remarked about the sunset. I can see the sunset effect on my tape right before the diamond ring.

I have an image that I stiched together of what the landscape looked like (taken from my videos) during the eclipse in 2001 -360 degrees around during totality and for 1999 pre ring of fire 2 minutes before totality as a contrast.

<http://members.aol.com/kcstarguy/blacksun/2001eclipse.htm>

<http://members.aol.com/kcstarguy/blacksun/ringoffire.htm>

From Pierre Arpin

With 11 totalities withnessed (7 seen) I can admit that the 1991 eclipse was the most enjoyable not necessary because totality was so long but for the corona by itself.

I never saw a corona as bright as this one not to mention its complexity in shape. I have to admit that prominences were a real treat because I didn't expect to see them because the moon was much larger in apparent diameter than the sun.

The runner-up in that category was the 1980 totality in India

That was a dark eclipse but not the darkest. The champion on this field was my clouded out first ecl[pse on july 20th 1963 in Becancourt. The totality at my observing site was only 55 sec but the obscurity arrivend suddendly and for the first 15 sec I had difficulties to see the nearby houses.

The runner-up was the 1991 eclipse.

From Franz Krojer To HASTRO Date 05.10.01 Re **Eclipse at the morning, crescent at the evening**

I have asked Prof. Herrmann Hunger (University of Vienna), the editor of the Babylonian Astronomical Diaries (652 BC until 61 BC), if there are mentioned extreme visibilities of the moon like "morning in the east, evening in the west" or "eclipse at the morning, crescent at the evening" etc.

The Astronomical Diaries run for about 600 years, are one of the greatest scientific projects ever, and where made by professional astronomers with rather systematic methods.

Hunger's answer is, that he has never read in the Diaries such an extreme observation of the moon.

BTW: There are sometimes discussions about stars, which perhaps could have had other brightnesses or colors in an-

*(Continued on page 8)*

## GENERAL TOPICS

cient times. (For example Sirius, Achernar/Acamar, Deneb.) I have also asked Prof. Hunger, if such discussions could get help from the Babylonian astronomy. His answer is, that reports of the brightness or color of stars in the Babylonian astronomy are very seldom.

In an Assyrian kings text ("Koenigsinschrift") it is mentioned, says Prof. Hunger, that Sirius glows like copper (which would be "red", as also Ptolemy says). But it was rather plausibly argued, that this Babylonian observation was caused by atmospheric influences due to seasonal effects. (see: F. X. Kugler, Sternkunde und Sterndienst in Babel, 3. Ergänzungsheft von J. Schaumberger, Münster 1935, p. 348f.) Bye, Franz Krojer



From PP To SEML Date 30.10.01

### Re SESCOANNINGS

Astronomy Now November 2001

Rhythms of the Sun by Chris Kitchin, pages 64 and 65: About sunspot activity and life of Samuel Heinrich Schwabe in search of an intramercurian planet.

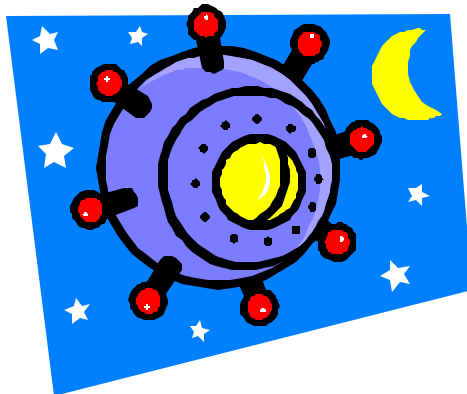
When is a blue moon not a blue moon by Chris Kitchin, pages 69 and 70: About the blue moon in November in the UK.

Society News: Cotswolds abroad and Wansfell Astronomy Weekend by Neil Bone, page 72: About a trip to Zimbabwe, June 21, 2001 and a Solar Astronomy Weekend.

Contact: Astronomy Now, PO Box 175, Tonbridge, Kent TN10 4ZY, England, tel +44 191 487 6444, fax +44 191 487 6333



From Glenn Schneider To SEML Date 11.10.01 **Re Extra solar Eclipses**



I'll risk something slightly off topic. On Wednesday, March 24 at 4PM I'll be giving a talk on "Dusty Circumstellar Disks and Substellar Companions" at the Center for Integrative Planetary Science at U.C. Berkeley. <http://cips.berkeley.edu/>

Part of that talk will include coronagraphic imaging, albeit of other stars, so it is marginally eclipse related (though artificially so). If there are any on this list who are in the San Francisco/Oakland/Berkeley area, I would welcome the opportunity for a face-to-face meeting. Drop me an off-SEML email. I hope to meet some others of you... Cheers, Glenn Schneider



## GENERAL TOPICS

From Wil Carton To SEML Date 04.10.01 RE  
**Dutch astronomer G. van den Bergh**

Friends, about Prof. Mr. Dr. G. van den Bergh: Often somebody who has interest for periodicity-cycles of eclipses, references to the Dutch astronomer G. van den Bergh. I met him personally several times in 1960-1962, one time accompanied by Jean Meeus, with whom I had a fine meeting in Prof. G. van den Bergh's home in Amsterdam, Van Eeghenstraat near the Vondelpark. He was a brilliant amateur astronomer, but his profession was: Professor of Constitutional Law, involved to the University of Amsterdam (UvA). Here are in a nutshell details about his life and career:

George van den Bergh was born the 25th april 1890 in Oss (Niederlande); He studied in the University of Amsterdam initially Chemistry, but he turned to Jurisprudence. There he obtained the jurist title "Meester" Mr (Master in English?). He obtained in 1915 the doctor's degree in Jurisprudence. Then he studied further in Constitutional Law. He obtained in 1924 the doctor's degree cum Laude in Constitutional Law. He was 1923-1932 town-councillor of Amsterdam for the Social-Democratic Party. Parallel he became 1925-1933 member of the Dutch national parlement in The Hague, for the Social-Democratic Party. Finally he was 1936-1960 Professor of Constitutional Law in the University of Amsterdam. At the age of 70 years he retired and became "emeritus" in 1960.

### Amateur astronomer

He observed the pearl-necklace central solar eclipse of 17 April 1912 in Limburg (the extreme South-East of Holland, near Maastricht). The broken annulus of the annular eclipse lasted only five seconds. The scene became very dark, he wrote afterwards. He planned to chase the next European Total Solar Eclipse, 21 August 1914 in the Skandinavian city Gävle (Sweden). But the outbreak of the First World War interfered, and his voyage was cancelled.

He wrote in 1935 the popular astronomical "Aarde en Wereld in Ruimte en Tijd" ("Earth and World in Space and Time"), that till 1960 enjoyed wide distribution by eight reprints. I myself received the reprint-edition of 1951 on my fourteenth anniversary in April 1956. It contained a very instructive chapter about eclipses of sun and moon, and two unfoldable large SAROS-INEX Panoramas, one containing the 8000 Solar Eclipses from the monumental eclipse catalogue "Canon der Finsternisse" of Theodor von Oppolzer (1887), the other containing the 5200 Lunar Eclipses of Oppolzer's catalogue. This made my interesse awakening! Van den Bergh was also the author of a nonpopular study about eclipse cycles in 1951

(during his career in which he daily gave his juristic lectures). Title of these two volumes: "Regelmaat en Wisseling bij Zonsverduisteringen", of which in 1955 also an English version has been issued: "Periodicity and Variation of Solar Eclipses", printed by the juristic editor Tjeenk Willink in Haarlem, Holland. It contains extensive studies of the possible cycles in the many orbital parameters of the lunar orbit and the earth orbit. From two basic periods (Saros 18 years + 11 days, and Inex 29 years - 20 days) he found many useful combinations. Essential spinoff was, that Van den Bergh found different cycles, one for the good periodicity to derive other solar eclipse dates, another period for the latitude of the eclipse track beginpoint, noonpoint and endpoint on Earth, another for the longitude, the clocktime, the character (total, annular, or partial) on earth, and so on. That would enable to make one "new" solar eclipse from seven eclipses in Oppolzer's catalogue, each of these giving one characteristic through the appropriate cycle. Van den Bergh convinced the leaders of the Astronomical Faculty in Amsterdam (prof. Zanstra and dr. Koelbloed) of this method, to extend the time range of Oppolzer's Canon (1208 BC - 2162 AD) to the preceding centuries. He hoped to help historians to convert relative chronologies to absolute chronologies, by enable them to fix ancient solar eclipse records in our calendar BC.

Dr Koelbloed "computed" with these cycles the solar eclipses between 1600 BC and 1200 BC. The results were published in 1955 in the book: "Eclipses in the Second Millennium BC", printed by the juristic editor Tjeenk Willink in Haarlem. So the years 1950-1955 were the top years of Van den Bergh's astronomical oeuvre. He observed the total solar eclipse of 30 Juni 1954 in Sud-Norway (Larvik, neben Oslo), also 2 Oktober 1959 in Las Palmas (Canary Islands), again 15 February 1961 in Southern France (Nice), and reported enthusiast descriptions in the Dutch radio, in the newspaper "Het Vrije Volk" and in the astronomical monthly popular magazine "Hemel en Dampkring".

Professor George van den Bergh died the 3d of October 1966. In Holland he became a TV-personality in the early sixties by his argued objections against manned spaceflight. He preferred automated equipment. because of the great risks for human beings to bring them from space safely back to earth. Nucleus of his opinion was the re-entry problem. By that time nobody had still heard about the heat shield to brake the re-entry velocity in the atmosphere.

Wil Carton, Kastanjelaan 25, 1901 SB CASTRICUM, H o l l a n d

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## GENERAL TOPICS

From Gerry Foley

There may be some confusion here with the professional astronomer van den Berg of the University of British Columbia. My late wife and I had the pleasure of attending his wedding to the daughter of friends here in Columbus, Ohio in the late seventies. Their story is a romantic tragedy. The woman attended some of his lectures when they were both in their twenties and he was at Ohio State University. They had no other contact for twenty or so years, when he was a guest lecturer at OSU. The woman, now middle aged, attended the lecture. They renewed their old acquaintance and were married.

Unhappily she died a few years later, so their happiness together was rather short lived. Gerry K8EF

From Wil Carton

Yes, mr Gerard M Foley, There is indeed a professional astronomer, originated from Holland, with the name Sydney van den Bergh. He has been chairman of the International Astronomical Union. So he has become quite famous. He is family, maybe cousin, of George van den Bergh. I do not know more about his life, career and oeuvre. In Eclipse literature I never saw a reference to him. So I hurry to finish this message. Wil Carton.

From Fred Espenak To SEML Date 28.10.01

### Re Limb phenomena and ratio

To the rest of the forum: just how much smaller will the sun appear compared with the moon in Australia? (I ask this because I wonder, as was India, that more of the chromosphere would be generally visible during totality and that the hot stuff just above the chromosphere would also be seen throughout totality.)

Below is a table showing the ratio between the topocentric apparent diameters (Moon to Sun) during some recent Total Solar Eclipses.

Eclipse Date	Location	Diameter Ratio (Moon/Sun)
-----	-----	-----
1991 Jul 11	Baja, Mexico	1.0798
1994 Nov 03	La Lava, Bolivia	1.0473
1995 Oct 24	Dundlod, India	1.0114
1998 Feb 26	Oranjestad, Aruba	1.0426
1999 Feb 16*	Greenough, Australia	0.9906
1999 Aug 11	Lake Hazar, Turkey	1.0273
2001 Jun 21	Chisamba, Zambia	1.0445

2002 Dec 04	Zimbabwe	1.0190
2002 Dec 04	Australia	1.0100

\* Annular

As you can see, the Moon/Sun diameter ratio in Australia 2002 is even smaller than India 1995. Zimbabwe 2002 is larger than either one, but it should still offer some excellent views of Baily's beads and chromosphere. Plus, it offers a duration nearly three times longer than Australia.

In any case, if you are really interested in prolonged chromospheric viewing and Baily's beads, you should consider viewing a TSE from near one of the limits. This is something I haven't done yet, but someday... - Fred Espenak

From robert Slobins

In 1995, I sat in back of my third-contact 'flash-spectroscope' and watched the chromospheric spectrum wheel around the lunar limb. We thought we were on centerline, but I guess that the predicted versus observed results were off a bit.

I was not fit to do anything but set up equipment and push buttons; 24 hours before I had a fever of 103F.

It looks as if this would be an ideal eclipse to do cheap spectrography. Since we would still be pretty much at solar max, the green 5303 line would show very well. Robert B Slobins



## GENERAL TOPICS

From Eric Flescher To SEML Date 22.10.01

### Re Cool eclipse facts

Any more to add . Any comments to modify? (15) I have never had the temperature drop 20 degrees as I think. Is there a recorded maximum temperature drop?

Cool Eclipse Facts BY Dr. Eric Flescher (KCStarguy@aol.com) modified from <http://www.space.com> posting

- (1)The longest duration for a total solar eclipse is 7.5 minutes.
- (2)Only partial solar eclipses can be observed from the North and South Poles.
- (3)Nearly identical eclipses (partial, annular or total) occur after 18 years and 11 days, or every 6,585.32 days (Saros Cycle).
- (4)Every eclipse begins at sunrise at some point in its track and ends at sunset about halfway around the world from the start point.
- (5)The maximum number of solar eclipses (partial, annular or total) is five per year.
- (6)There are at least two solar eclipses per year somewhere on Earth.
- (7)A total solar eclipse is not noticeable until the Sun is more than 90-percent covered by the Moon.
- (8)At 99-percent coverage, daytime lighting resembles twilight.
- (9)Eclipse shadows travel at 1,100 miles (1,770 kilometers) per hour at the equator and up to 5,000 miles (8,046 kilometers) per hour near the poles.
- (10)The width of the path of totality is at most 167 miles (269 kilometers) wide.
- (11)Total solar eclipses happen about once every 1.5 years.
- (12)Partial solar eclipses can be seen up to 3,000 miles (4,828 kilometers) from the track of totality.
- (13)Before the advent of modern atomic clocks, studies of ancient records of solar eclipses allowed astronomers to detect a 0.001-second per century slowing down in Earth's rotation.
- (14)Local animals and birds often prepare for sleep or behave confusedly during a total solar eclipse.
- (15)Local temperatures often drop 20 degrees or more near totality.

From Jean Paul Godard

- 15) what kind of degrees °C, °F ?
- (3) ....and Eight hours (leading to a 120° longitude displacement on earth)

From Jen Winter

How many recorded the temperature drop in Turkey during the '99 eclipse. I seem to recall some amazing numbers such as a start air temperature of 113 degrees (f) and totality air temp at 89 degrees with the sand temperature at 127 degrees (f) before and 93 degrees during totality. I would have to double-check our data, but I remember those figures to be remarkable and quite stirring.

I know that others in Turkey were taking measurements. Who else here? Clear Skies, jen

From Peter Tiedt

Is No 2 correct???

During the SH summer the S Pole is tilted "upwards" and is no longer the "bottom" of the Earth. Therefore the lunar umbra could sweep across the pole and a Total (or Annular) eclipse would be visible.

Vice Versa for the N Hemisphere.

For No 3 I would say "similar" and not "nearly identical"

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## GENERAL TOPICS

My 2c worth ... Peter

From Gerry Foley

(3a) Each succeeding eclipse in the Saros cycle occurs about 100 degrees to the west of the last (one-third of the earth's circumference).  
Gerry K8EF

From Glenn Schneider

> Any more to add . Any comments to modify?

Indeed, as I have to take exception with a few...

> (15) I have never had the temperature drop 20 degrees as I think. Is there a recorded maximum temperature drop?

I cannot comment on a "record" but from Tunjon Koduk, Indonesia, in 1983, the pre-eclipse high was 108F, and the post-eclipse low 73F. The onset of an eclipse-driven "sea breeze" really helped cool us down...

> (2)Only partial solar eclipses can be observed from the North and South Poles.

This is not correct. There is nothing special about the poles which preclude annulars and totals. The annular of 14 December 1917 was, I believe, the most recent of such where centerline itself came closest to the (south) pole. The June 17-18 1909 annular/total missed the (north)pole itself, I believe by a very small amount (didn't re-run it but about 100 km if memory serves me correctly), but the 19 April 1939 annular was visible from the North pole. And, perhaps, most interestingly to look forward to, the 20 March 2015 TSE will end at sunset at the North Pole! I've got my Parka ready!

> (4)Every eclipse begins at sunrise at some point in its track and ends at sunset about halfway around the world from the start point.

Only for tropical eclipses. Indeed some polar eclipses start and/or end at sunset or vice/versa, traverse "backwards" or primly along a N/S or S/N line. For a recent example see:

[http://nicmosis.as.arizona.edu:8000/ECLIPSE\\_WEB/ECLIPSE\\_86/ECLIPSE\\_86.html](http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_86/ECLIPSE_86.html)

> (5)The maximum number of solar eclipses (partial, annular or total) is five per year.

I believe the next time this happens in in 2709, but NONE will be total.

> (7)A total solar eclipse is not noticeable until the Sun is more than 90-percent covered by the Moon.

A \*TOTAL\* solar eclipse is not noticeable until the sun is 100% covered by the Moon. Until the, it's just partial.

> (8)At 99-percent coverage, daytime lighting resembles twilight.

This is pretty subjective, and I don't necessarily disagree. However, to put it in perspective a bit more quantitatively, at the lower limit of Civil twilight (Sun -6D elevation) the illuminance at the Earth's surface is about 3 lumens meter<sup>-2</sup>, for nautical twilight (Sun -12D elevation) it is about 0.01 lumens m<sup>-2</sup>. Anyone who took recent light-meter readings care to comment...

> (9)Eclipse shadows travel at 1,100 miles (1,770 kilometers) per hour at the equator and up to 5,000 miles (8,046 kilometers) per hour near the poles.



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## GENERAL TOPICS

... at mid-eclipse, of course. At the first and last umbral contact points with the Earth (when the umbral cone is at a tangent point) the REALTIVE lunar shadow velocity as measured TOCENTRICALLY approaches infinity. OK, I won't argue with relativity...

> (10) The width of the path of totality is at most 167 miles (269 kilometers) wide.

Huh? Those which exceed that, just from those I have seen (1970-2001):

20 June 1974 - 344 km

26 Feb 1979 - 307 km

20 June 1992 - 297 km

09 March 1997 - 368 km



> (11) Total solar eclipses happen about once every 1.5 years.

Is more like one every 1.35 years (at least for +/-100 years from today). This include annulat/totals - which are total for some portion of the path (but of course, if you get there you see a TSE).

> (12) Partial solar eclipses can be seen up to 3,000 miles (4,828 kilometers) from the track of totality.

Or, about 240,000 miles... if you go "up". ;-)

> (13) Before the advent of modern atomic clocks, studies of ancient records of solar eclipses allowed astronomers to detect a 0.001-second per century slowing down in Earth's rotation.

Now THAT is something I was unaware of. Do you have a reference for this?

> (14) Local animals and birds often prepare for sleep or behave confusedly during a total solar eclipse.

So do some local people... ;-)

From Marc Weihrauch

That's the one I didn't understand. Why actually should there be no total or annular eclipse on the poles? Marc

From Wil Carton

Glenn Schneider wrote: Now THAT is something I was unaware of. Do you have a reference for this?

My (= Wil Carton's) answer is: Yes, in one of the years between 1920 and 1926 a classicist named John K. Fotheringham turned to become an astronomer and he recalculated a lot of ancient astronomical records, including solar eclipse records. He discovered a rotational delay of 1,6 millisecond/century\*century. You can read this in a short account in Jack Zirker's magnificent book "Total Eclipses of the Sun" (ed. Van Nostrand Reynolds, 1984, reprinted in about 1995). In about 1972 a certain Robert R. Newton of John Hopkins University reconsidered Fotheringham's deductions and criticized the method as "the identification game", an expression with which Newton meant that it was circle reasoning. Newton's book had a title that sounded as "Ancient astronomical Records and the Rotation of the Earth" and had been published by John Hopkins University. In those years I have read it in the library of the University of Amsterdam. Finally the expert prof. F.R. Stephenson of the University of Durham (U.K.), who already had written a magnificent doctoral thesis in 1972 about "Some Geophysical deductions from early astronomical records", published in 1997 his magnum opus "Historical eclipses and Earth's rotation", where the value of the slowing down of the rotation was determined to 1,7 milliseconds/century\*century. Wil Carton, Casticum, HOLLAND

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From Gerry Foley

I suspect that Newton's criticism may have been:

1. Fotheringham dated or refined the date of the ancient record by identifying it with a particular eclipse.
2. He then used this date to find the error.

However, if Fotheringham was careful (or lucky) to know the time of day and location of the ancient observation then he could find a discrepancy from computation based on a constant year, and so derive a good number for the variation in the value for the year. Gerry K8EF

From Wil Carton

Gerry, About Fotheringham's deductions of ancient eclipses and R.R.Newton's criticism: Solar physicist Jack Zirker tells in his 1984 book "Total Eclipses of the Sun" (reprint 1995, ed. Van Nostrand Reynold) in the Chapter "Time, Tide and Gravity":

"Since the Moon's acceleration is gravitationally coupled to the Earth's rotation, and since the Earth's rotation has been used throughout history as the primary standard, the astronomer's task in analyzing ancient eclipses is especially difficult. He must determine both the rate of the Earth's spindown and the lunar acceleration simultaneously from the eclipse data. Perhaps the most widely quoted of such investigations of the lunar acceleration is that of J.K. Fotheringham, published in 1920. (.....). Fotheringham selected eleven solar eclipses for his study. They cover a period of 1400 years, ending with the eclipse of Theon in 364 AD. (.....). Fotheringham's method is typical, in principle, of all later work, and he describes it in clear language: " I adopt elements in the motion of the Sun and Moon supposed to be approximately correct, and compute the belt of totality or annularity for each eclipse. I then make similar sets of computations with two sets of elements, in which the secular accelerations of the Moon and Sun respectively have been increased by 1 arcsecond per century... From the belts of totality I compute equations showing the limits between which the two accelerations must lie in order to satisfy the presumptions made in regard to each eclipse... Graphs representing the different equations are then plotted out on a sheet of paper, and it is thus possible to see to what extent the presumptions are consistent and what values of the two accelerations will satisfy the presumptions which are found to be consistent." (.....) Fotheringham found the solar and lunar accelerations were + 1.5 and + 10.8 arcseconds per century per century, respectively, when referred to mean solar time. (.....) Fotheringham's work has been heavily criticized by recent investigators, especially by R.R. Newton. (.....): "he played the 'identification game'. According to R.R. Newton, the game involves a preliminary estimate for the lunar acceleration, predicting the circumstances of ancient eclipses and then discarding those eclipses that disagree too strongly with the prediction! The calculations are then repeated with "reliable" observations and yield, not surprisingly, values that differ little from those assumed initially. Newton considers that most investigators of the twentieth century have played this game. Eclipse records, say Newton, should be selected in advance of any calculations, for their historical authenticity, and discarded only if they fail the test." <end of quotation from Zirker >.

In this long quotation you find the solar acceleration +1.5 arcsec/cy\*cy when referred to mean solar time, published by Fotheringham in 1920. The mean solar time is equivalent to the rotation of the Earth, which is (we know since Spencer-Jones, 1939) non-uniform. So it is the sham-effect or mirror effect of the slowing down of the Earth rotation. Wil Carton.

From Wil Carton

Mistake: Sorry, in my mail of yesterday 23 october, I made a mistake in the sentence: "He (Fotheringham) discovered a rotational delay of 1.6 milliseconds / century \* century."

That ought to be: 1.6 milliseconds / DAY \* century: this means 1.6 milliseconds per day per century, in other words: One day will last 0.0016 seconds longer than the corresponding day one century earlier. Example: the rotational period of the Earth will today 24 october 2001 last 0.0016 seconds longer than on 24 october 1901. Accumulating over one full century of 36525 days this is equivalent to a loss of rotational angular speed of  $0.0016 * 36525 = 58$  seconds/century. This grows parabolically to the clock error Delta-T. I try to explain this: See the strange dimension sec / c y \* cy and also sec / day \* cy: this is a first deriva-

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## GENERAL TOPICS

tive of the angular rotation speed, and it is a second derivative of the change in Earth's orientation on a specific moment, ... and this last mentioned is equivalent to the clock error Delta-T. So to derive Delta-T from the retardation, the retardation has to be twice integrated to time, and this can be done with the formula  $0,5 * \text{retardation} * T\text{-square}$ .

I took the Fotheringham-value 1,6 msec/day\*century from a quote in my college dictate (Prof. G.B. van Albada, 1960-1961). The modern value, published by F.R. Stephenson in 1997 is 1,7 instead of 1,6. I do not understand its difference with Zirker's quoted value 1,5 arcseconds/cy \* cy... (Remember: one degree rotation = 4 minutes of time, so one arcminute = 4 seconds, so one arcsecond = 4/60 seconds. Wil Carton.

From Chris malicki

I recorded temperatures in Turkey, Aug. 11, 1999 at Hasankeyf near the town of Batman. I had a thermometer in the sun and one in the shade (both standing up on the ground - measuring air temp. near ground level). The sun exposed thermometer recorded 48 degrees celsius at first contact, dropped to 37 at totality and went up to 44 degrees an hour after totality. The shade thermometer recorded 45 degrees C. at first contact, dropped to 31 degrees C. just after totality, and rose to 40 degrees an hour after totality. Chris Malicki

From Michael Gill To SEML Date 04.10.01 **Re Eclipse references**

Eclipse References...

Journal of the British Astronomical Association, ISSN 0007-0297, Vol.111 No.5, October 2001:

More images from the African eclipse, pages 244 and 245

Light levels at the June 21st 2001 solar eclipse, page 246

E.W. Maunder and the Labrador 1905 solar eclipse, page 272

Michael Gill.

From Patrick Poitevin To SEML date 15.10.01 RE Eclipse references

Dear All, Sky and Telescope November 2001 has following solar eclipse related items:

Mission Update by Jonathan McDowell: Genesis and Koronas-F; page 28

Sixty years of Hindsight by Leif J. Robinson (with tales and stories about as well solar eclipses); pages 30 to 34

Software Showcase: Sun Followers by Stuart Goldman; page 74

Briefly Noted: Maria Mitchell - A life in Journals and Letter; page 82

Astronomy on the Road by Edwin L. Aguirre (with customised car plated from for example Pat Totten, Fred Espenak, Vic and Jen Winter, Jay Pasachoff; pages 84 and 85

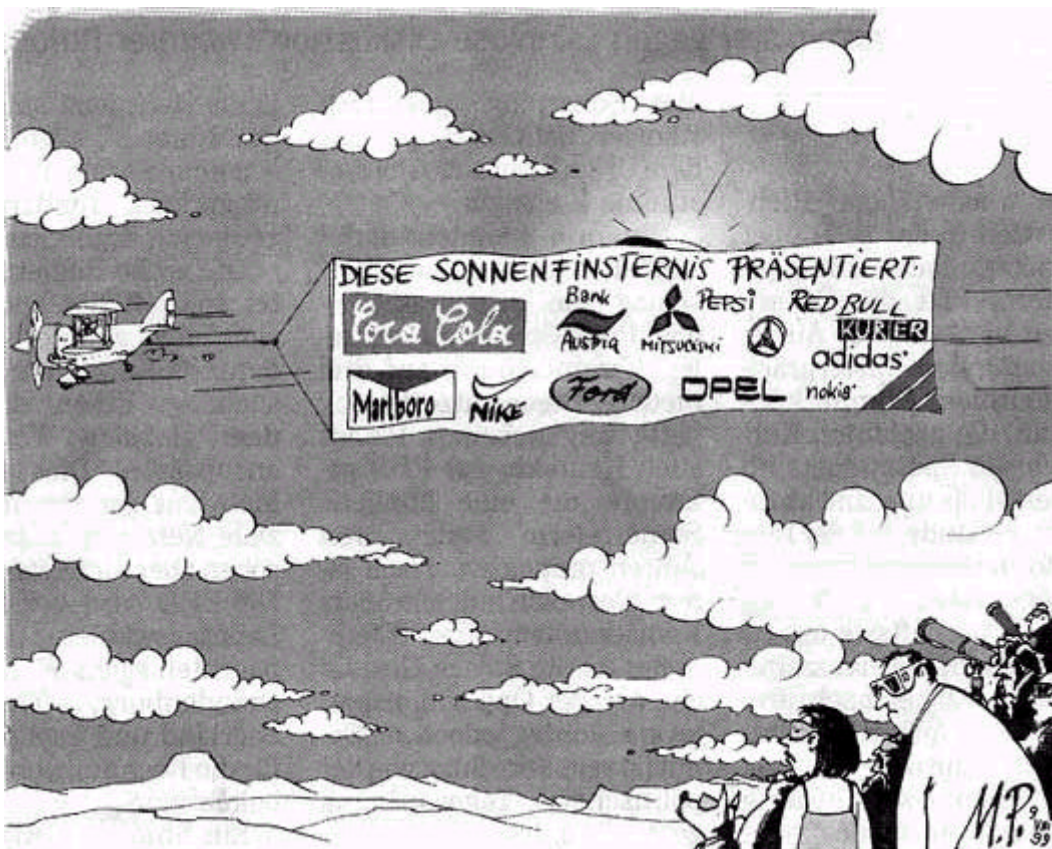
Star Trails: A Solstice Eclipse by David H. Levy; pages 86 to 89

Sky Wise by Jay Ryan: Penumbra; page 120

Best regards, Patrick



## GENERAL TOPICS



From Eric Flescher To SEML Date 21.10.01 Re **Eclipse joke**

I liked this. Dr. Eric Flescher (KCStarguy@aol.com)

From: Edward Ruden (ruden@plk.af.mil) An astronomer is on an expedition to Darkest Africa to observe a total eclipse of the sun, which will only be observable there, when he's captured by cannibals. The eclipse is due the next day around noon. To gain his freedom he plans to pose as a god and threaten to extinguish the sun if he's not released, but the timing has to be just right. So, in the few words of the cannibals' primitive tongue that he knows, he asks his guard what time they plan to kill him. The guard's answer is, "Tradition has it that captives are to be killed when the sun reaches the highest point in the sky on the day after their capture so that they may be cooked and ready to be served for the evening meal". "Great", the astronomer replies. The guard continues, though, "But because everyone's so excited about it, in your case we're going to wait until after the eclipse."

From Francis Podmore

This makes me wonder: Has anyone compiled (or know of) a collection of ECLIPSE JOKES? Or ECLIPSE CARTOONS? Who would like to do that? Francis

From Jan Pieter van de Giessen

See also:

<http://www.mreclipse.com/SENL/SENL9812/SENL812m.htm>

## GENERAL TOPICS

[http://www.uselessjokes.com/joke\\_2/001094.shtml](http://www.uselessjokes.com/joke_2/001094.shtml)  
[http://www.lotsofjokes.com/cat\\_76.htm](http://www.lotsofjokes.com/cat_76.htm)

And the following additions found in my database:

### ORGANISATIONAL HIERARCHY

Memo from Director General to Manager: Today at 11 o'clock there will be a total eclipse of the sun. This is when the sun disappears behind the moon for two minutes. As this is something that cannot be seen every day, time will be allowed for employees to view the eclipse in the car park. Staff should meet in the car park at ten to eleven, when I will deliver a short speech introducing the eclipse, and giving some background information. Safety goggles will be made available at a small cost.

Memo from Manager to Department Head: Today at ten to eleven, all staff should meet in the car park. This will be followed by a total eclipse of the sun, which will disappear for two minutes. For a moderate cost, this will be made safe with goggles. The Director General will deliver a short speech beforehand to give us all some background information. This is not something that can be seen every day.

Memo from Department Head to Floor Manager: The Director General will today deliver a short speech to make the sun disappear for two minutes in the eclipse. This is something that can not be seen every day, so staff will meet in the car park at ten or eleven. This will be safe, if you pay a moderate cost.

Memo From Floor Manager to Supervisor: Ten or eleven staff are to go to the car park, where the Director General will eclipse the sun for two minutes. This doesn't happen every day. It will be safe, but it will cost you.

Memo from Supervisor to staff: Some staff will go to the car park today to see the Director general disappear. It is a pity this doesn't happen every day.

---

Teacher: There will be an eclipse of the moon tonight. Perhaps your parents will let you stay up to watch it.

Pupil: What channel is it on?

---

Q: How does the barber cut the moon's hair?

A: Eclipse it.

---

A few years ago, as a solar eclipse approached, some planetarium directors in Southern California sent out warnings to the community about the eclipse. Experience shows that daytime darkness leads to accidents among Individuals, and also they have been known to stare at the partially eclipsed sun and blind themselves. (Honest. It really happens.) The planetarium received an indignant letter from a local Individual. She said that if an eclipse was so dangerous, they never should have decided to hold one and ought to cancel it.

---

"Can I go outside and watch the solar eclipse?" asked Rupert. "Okay," replied his father, "but don't stand too close."

---

You know you are Zimbabwean if you can crack at least one Simon Muzenda joke. Zimbabwe's first vice president is the butt of many of the country's most popular jokes and there is no doubt that as the temperatures get cooler, bar talk is warmed up by one or two current Mzee jokes. The latest one which was coined just in time for last week's solar eclipse says the VP was so impressed by the huge number of foreign tourists flocking to Zimbabwe to witness the phenomenon that he told a Cabinet meeting that "the solar eclipse must be made an annual event".

---

April 1999: Progress is pleased to announce yet another first, an on-line preview of the Total Eclipse of the Sun (<http://www.progress.demon.co.uk/Fun/Eclipse.html>) on 10th August 1999 covering southern England and northern France.

From Eric Flescher

I would be happy to add any to my upcoming space humor page at my site. Just post on listserve or send to me.

From Jorg Schoppmyer

Hi folks, the joke is in german, the meaning is 'This solar eclipse is powered by...'

[http://www.autsch.de/cgi/postkarte/23102001/card52\\_7434350747358.html](http://www.autsch.de/cgi/postkarte/23102001/card52_7434350747358.html)

## GENERAL TOPICS

From Evan Zucker To SEML Date 191001

### **Re Fail safe solar telescope**

I'm making plans to observe the December 14 partial solar eclipse at my son's school, and one of the other parents told me about a so-called "fail-safe" solar telescope. He said it uses a very slightly aluminized primary or secondary mirror to transmit only a tiny fraction of the sun's light. It's fail-safe because if the aluminized mirror gets scratched, even less light would be transmitted, in contrast to a standard optical filter which would allow more light (sometimes too much light) to be transmitted.

Is anybody familiar with this type of telescope? Does it have a name? I'm wondering if this method would provide a sufficiently sharp image of the sun.

This type of telescope would be of special interest for use at schools because many schools and school districts are hypersensitive about their students going blind observing an eclipse and therefore are not willing to let students look through regular telescopes with a filter over the objective end. Evan H. Zucker

From Jen Winter

Evan, It sounds like you're describing a Herschel Wedge. I have heard of several different applications of the tool for observing in white light. One is in the position of the secondary and the other in a diagonal's location on a refractor. A bonus of the wedge is that your image is not colored or tinted. You'll see "White Light".

It can be a very useful tool in the area of high resolution solar photography because it allows the use of the full aperture of the scope with fewer surfaces. I would direct your attention to a great page from a guy named Franky Dubois. at: <http://www.digilife.be/club/Franky.Dubois/pho.htm>

He frequently uses a Herschel Wedge to image the sun in white light. I don't know how difficult the optics are to acquire. We have not used the wedge ourselves in solar demonstrations. We find a combination of issues (in our opinion) to prevent us from choosing this option. 1) children at presentations are not likely to pay close attention. 2) Special warnings regarding "DO NOT TRY THIS AT HOME" are harder to get clearly across if the telescope looks like a normal telescope. A wedge is hard to point to and say "Your telescope doesn't have this special filter. Don't point your telescope at the Sun". We chose to use a white-light or H $\alpha$  filter to express this point because it's a visible and tangible object which makes your telescope special and different in the minds of the wee ones.

We've never had a school react negatively when we brought telescopes up for solar observing. We gave demonstrations last year to 38 classes about the Christmas Eclipse and not one school or administrator lodged a complaint or concern. Primarily, the impression we received was that if you've got the big, expensive telescope, you are the experts and they trust your opinion. It would be different to convince a teacher to, unattended, point that same telescope at the Sun with nothing more than a box of parts and an instruction manual.

If you have a commercially manufactured solar filter, then there should be no problem with its transmission. You can also use the topic (with Fred's handy guide for safe filter materials in the back of every NASA eclipse bulletin) to discuss safe solar observing with the school.

The Herschel Wedge is a good tool. It's not a terribly common tool. It's not necessarily a better tool, but it works well. My two cents... Clear Skies, jen

From Evan Zucker

Thanks for the suggestion. I took a look at that link and some others, and I'm not so sure that's the same thing as what this guy was describing. I'm still looking for a good web site explaining how the wedge works.

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## GENERAL TOPICS

>We've never had a school react negatively when we brought telescopes up for solar observing.

Then you're in the fortunate minority. I've encountered this many times, both in the U.S. and abroad. I know that Jay Pasachoff, among others, has fought this battle, not always successfully.

To give you some idea of the mind set I have to deal with in the San Diego Unified School District, the letter rejecting my proposal to set up my telescope to view the 1999 transit of Mercury made reference to "astrology" rather than "astronomy." I know we've all encountered that with the public and mass media, but it's more painful to encounter it in the educational bureaucracy.

>We gave demonstrations last year to 38 classes about the Christmas Eclipse and not one school or administrator lodged a complaint or concern. Primarily, the impression we received was that if you've got the big, expensive telescope, you are the experts and they trust your opinion.

I guess there must not be a lot of lawyers living in that school district <g>. Unfortunately, they do live in almost every other part of the U.S. (and I used to be one). -- EVAN

From Robert Slobins

People: I am glad that we are having this type of discussion.

Do you all realize that what we are doing, chasing total solar eclipses, are a very recent phenonemon. That total solar eclipses are regarded as positive and beneficial is an idea that may be at most 300 years old. That anyone would go out of his way to see one is only 220 years old (the 1780 expedition from Harvard). That amateurs like us produce results with equipment unheard of in 1900 and unaffordable in 1970 except for professional expeditions ought to be astounding. Some of us on this list are setting all-time records--Glenn Schneider has 20-odd expeditions, some of the correspondents here have been able to make superb coronal images beyond the ability of the professors a generation ago and I have probably more flash spectra images than Donald Menzel acquired in his entire lifetime. These are achievements.

We are able to do this because of civilization. What we are talking about here is a sign of its decline-- an example in this case, legalised, justified robbery in the United States. If we all want to keep on doing what we all love to do here, then we need to pay attention to fighting this or fleeing from this in some way. --Robert B Slobins

From Jim Huddle

You can always take you children out of school for a day.... Jim Huddle

From Joel Moskowitz

Bob, I remember that the Indians considered the eclipse to be a bad sign, especially on Diwali. That's why they cowered inside. It was an especislly bad omen for a woman to give birth during the eclipse.

From Bill Ronald

Hi Even, Maybe I missed it in this thread but I don't remember anyone mentioning John Dobson's "solar telescope". It is a folded refractor in which the filter and diagonal are the same piece of glass. If the filter gets broken or falls out the sun can't be viewed because the diagonal is also gone. It also includes a piece of welder's glass in the light path for increased safety. It was described in the August 1989 issue of Sky and Telescope, p207.

An article describing how to build one, with pictures: <http://hometown.aol.com/sfsidewalk/sunscope.htm>

A picture of another one from the ATM Page: <http://www.atmpage.com/graphics/gallery/oconnel3.jpg>

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## GENERAL TOPICS

and an ATM thread: "ATM Dobson solar telescope?" <http://astro.umsystem.edu/atm/ARCHIVES/NOV98/threads.html>

This would fit your description of "slightly aluminized" mirror. Cheers ... Bill

From Gerard Foley

It seems to me that uncoated glass by itself would reflect an unpleasant and possibly unsafe amount of the sun. Isn't the reflectivity about 4%, and we use an attenuation much greater than that in eclipse glasses? Gerry K8EF

From Evan Zucker

Good point. I believe that visual solar filters transmit approximately 1/100,000 (0.001%) of the visible light. I don't know the reflectivity figure for uncoated glass, but I'm sure it's a lot higher than 0.001%.

I still haven't been able to find any information about the Herschel Wedge, and so I can't speak knowledgeable about it. -- EVAN

From Marc Weihrauch

Dear Evan, wouldn't projection be an option for you? It's a very convenient way to allow more than one observer at a time, so it's also far easier to explain something as you can simply point at a region of interest. It's the way I prefer for our public solar observations.

Beside those advantages you can easily do the "Don't try this at home". I usually show the visitors a piece of paper into which I've burnt small holes using the telescope. "You don't want this to happen to your eyes, do you?". This is usually very effective :) Best regards Marc

From Bill Kramer

Our local observatory directory, Tom Burns at Perkins Observatory, built a Herschel wedge based telescope several years ago that provides fantastic white light views of the sun. The configuration is a 6" primary with NO coatings. The purpose of the primary is to focus the light, although a decent percent of the light is reflected.

The telescope is a Newtonian style mounted in an open box frame using a Dobsonian style base - so the primary reflects back to a spider mount point where there is a wedge instead of a right angle mirror. The wedge reflects light from the back surface (that is important!) when lining it up.

This was still too bright - so a second wedge was introduced as a right angle at the eyepiece. Again, the second surface does the reflection.

With this setup on a typical Ohio day, the view of the sun is fantastic with the contrast between umbra and penumbra the best I've ever seen in a reflecting telescope. When we have a very transparent day, we introduce ND filters at the eyepiece to make the view a tad more comfortable.

At a recent astronomy fair we had at the observatory we had that set up next to a solaris showing prominences and a CrO2 filter on a Questar and a Mylar filter on an ETX. That was "my booth" to run, so I had plenty of time during set up to do side by side comparisons. And it just so happened that a very large sunspot group was putting on a great show (mid September). For visual, the white light reflector and hydrogen alpha provided the most inspiring views for the people that visited us that day (about 1000!). But I don't think it would work well for photography without further light reduction or the use of very slow film.

By the way, we ran the astronomy fair without incident at the solar telescopes except for some curious children re-aligning the wedge in the open frame. That is when I learned to use the second surface....

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## GENERAL TOPICS

There is no fail safe solar telescope - but there are diligent operators of telescopes that can make them safe. AND I DO NOT recommend using a projection method unless you plan to stand by the scope all the time. Last April we set up a large projection for Astronomy Day at a local museum and ended up taking it down after an hour was spent keeping people away from the eyepiece. We had some very near tragic situations, one was with an officer in our astronomical society who was simply not paying attention to what he was doing.

From Robert Slobins

A perspective: I recall that Thailand in 1995 made that year's eclipse a required subject to cover in science classes. Romanians in 1999 learned to observe the eclipse safely and did so. This June, Zambians did not hide from the eclipse either.

I taught the third-shift employees of the Chrismar Hotel in Lusaka about image projection, just as we ALL used before the 1970's. These people understood after 15 minutes and all enjoyed the event.

And these people are called third-world? Robert B Slobins

From Jim Huddle

Evan Zucker wrote, in part, "This type of telescope would be of special interest for use at schools because many schools and school districts are hyper-sensitive about their students going blind observing an eclipse and therefore are not willing to let students look through regular telescopes with a filter over the objective end." This is a big problem, here's one solution:

There is a product called the Sunspotter (TH). The manufacturer calls it "The safer solar telescope". The price is US\$ 300, and you can see the details at <http://www.starlab.com/ltiss.html/>.

I got one at the end of August, and I like it right well. It is designed as a sunspot-observing telescope, but can be used for partial solar eclipses as well. I have not done anything with students, yet, but since it is a projection-type device, I think you can probably get three or four kids watching the solar image at the same time.

While we were at Totality Day, I talked to Joanne Edmonds and her daughter about this instrument. They said it was easy to use. And since it is a projection device, it only requires minimal adult supervision.

Here is something you could try with a small group of kids: Set the Sunspotter up and get an image of the partially eclipsed sun, and then trace the image on the projection screen, write down the time, and replace the screen. (The screen is just a 5-inch by 7-inch piece of white paper.) Do this every five or ten minutes. After the eclipse, you can cut out the solar crescents, take them to the drugstore, and have the pharmacist weigh them for you. Since the mass of the crescent is proportional to the area, you can get a record of observed percent obscuration as a function of time. Younger students might want to color the crescents and paste them onto a time-line.

I have tried to photograph the solar image - you can do it, but as you might expect, since you can't get the camera pointed perpendicularly to the image, the image on film is a bit elliptical. I have not yet thought of a SIMPLE modification that would address this. Any ideas? Jim Huddle

From Jim Huddle

Jen Winter wrote, " If you have a commercially manufactured solar filter, then there should be no problem with its transmission."

Of course, Jen means a commercially manufactured solar filter THAT GOES OVER THE OBJECTIVE - a guy I know got a cheap telescope a couple (not more than two) years ago that came with one of those filters that screw into the eyepiece, which we SE list subscribers all know are dangerous, not because their percent transmission is too high, but because they can crack. Apparently, these screw-in filters are still being sold. Jim Huddle

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## GENERAL TOPICS

From Jay Pasachoff

I notice Evan's request for information about a fail-safe solar telescope. I can recommend the new, little 'Sunspotter' made by Learning Technologies in Cambridge, MA, and which costs only about \$300. I set it up and align it so that it shows the sun with sunspots in, literally, less than 10 seconds! It was great for the partial phases in Zambia and would be good for the Dec 14 partial (annular in Costa Rica, where I intend to go). It uses lenses and is folded so tightly that it is completely safe to use; nobody can look up at the solar beam. Jay Pasachoff

From Glenn Schneider

Gerold Foley's estimate of the OPTICAL reflectivity of [typical, polished, uncoated] glasses of ~4% for unpolarized light at normal incidence (perpendicular to the surface) is correct, though this depends upon the specific glass compound. BUT can be higher in the infrared - again depending upon the material.

Have you ever driven eastward, half-blinded, behind a pick-up truck with a flat rear window near sunset? It is a real pet peeve of mine that the auto manufacturers don't put a slight curve on such windows to disperse the sunlight rather than to reflect a collimated beam back at the driver behind. Of course the California lawyers see this as an opportunity...

Normally, for solar "viewing" a reduction in surface brightness by a factor of about  $10^5$  is desired.

Years ago, I had built a variant of the sort of telescope Ethan described in a FOUR optic system. This was a "Newtonian" design with an oversized secondary but also with tertiary and "quadrutary"(?) flats with ALL optics uncoated. In a sense, this is a "poor man's" Herschel wedge, and at the time I had some small extra flats lying around. It worked fairly well (well, enough for it's intended purpose) BUT you do get back-side reflections leading to afocal ghosting and contrast reduction from the uncoated flats if you are not careful in design. Remember the ~96% light going "through" the front surface of the glass has to go somewhere, and some can backscatter (specularly if you are not careful) back at you.

Still, I agree that PROJECTION is probably the best and easiest way to show a partial eclipse to a group. It is quite nice to be able to point to the image and discuss it en masse, rather than one at a time a properly protected eyepiece. It's also an opportunity to explain some simple optics. Both of these, by the way, seem more remote, or lost, if one is doing this on a TV screen using a filtered camcorder display.

Best of all (in my opinion) - as I've said here before - is to use the simplest of all, a projection FLAT over a long throw. If you have a small optical flat (eg., a Newtonian secondary), secure it on a tripod head and project a reflection of the Sun across the school yard onto a shaded white piece of paper. This makes a great pinhole projector. You can adjust the brightness/sharpness tradeoff by moving it further away (sharper) or covering up part of the mirror surface (fainter). The projected image, of course, will move across the target in a few minutes (crossing its own diameter in two minutes). But that's FINE - it brings home to the kids that the Earth really is rotating as they can watch the movement of the projected image. AND, the kids have fun being the "trackers", taking turns adjusting the pan head to recenter the image so others can see it.

The ONLY problem I can foresee for is that you do need to tell the kids who are up near the target image not to stick their head in front of it and look back at the mirror. Otherwise I can foresee the court queues filling up. Of course, you can put the target 6 feet up, but someone can still walk across the school yard, into the parking lot, and look at the sun in the rear window of your pick-up truck and you'll end up in court anyway. Sigh. Glenn Schneider

From PP

Jim Huddle wrote: While we were at Totality Day, I talked to Joanne Edmonds and her about this instrument. They said it was easy to use. And since it is a projection device, it only requires minimal adult supervision.

It is indeed very easy to use. We first used it with the kids (12 and 14 now) at Fred's and Pat's place to observe the Xmas eclipse in New Jersey. Then we took it to Africa. See as well the reports and descriptions of the Sunspotter in the SENL. The technical data are in the SENL issue as well. Best regards, Patrick

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## GENERAL TOPICS

From Evan Zucker

I had read about that but didn't know if it was any good. Thanks for the recommendation. Of course, it still has the limitation of any projection or indirect system, namely that you're one step removed from the observation compared with having your eye at the eyepiece, which I much prefer. But that isn't always an option.

If anybody wants more information, here's the web site: <http://www.starlab.com/ltiss.html>. -- EVAN

From Dale Ireland

Hi, I don't see how any of these ideas will satisfy schools fears of liability. You still have the problem of the kids who are in line or standing around staring at the partially eclipsed Sun, especially if you tell them not to do it. Even if you don't consider that a valid argument the school administrators just say they aren't going to take any chances not matter what and they will watch it on TV or not at all. I don't think they will accept any design, and the more you have to describe the technical details about how safe it is the less they will understand it. Dale

From Evan Zucker

Dale, you have nailed it right on the head. That is **PRECISELY** what many school administrators say, and this is precisely the fear-of-lawsuit attitude that has resulted in countless school children, both in the U.S. and elsewhere, being locked inside their schools while a total solar eclipse blazes overhead.

This mind set is so ingrained in the U.S. that when I was in law school in 1979, several of my fellow law students refused to believe me when I told them I could let them safely observe the partial eclipse on 26 Feb 79. They also said they wouldn't be willing to look at the total eclipse even if they were within the path of totality (which we weren't) because what I was telling them conflicted with what they had heard elsewhere (the propaganda they had deluged with all their lives), that they did not know which to believe, and that they there therefore were not going to risk their eyesight just on my say-so.

I used to be a trial lawyer, but I'm proud to say I no longer practice law. (Instead, I sell software named "Totality" to lawyers and collection agencies. End of advertisement <g>.)-- EVAN

From Dale Ireland

will that thing fry eggs too? Dale

From Glenn Schneider

This phenomenon is not unique to the U.S.:

[http://nicmosis.as.arizona.edu:8000/ECLIPSE\\_WEB/ECLIPSE\\_76/ECLIPSE\\_76\\_SCARE.html](http://nicmosis.as.arizona.edu:8000/ECLIPSE_WEB/ECLIPSE_76/ECLIPSE_76_SCARE.html)

Do you think we will see a repeat of this in 2002? Any Aussies on the list care to comment? Glenn Schneider

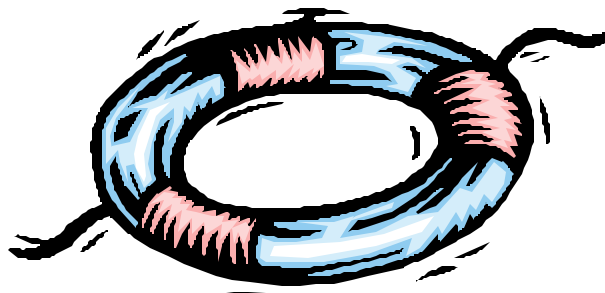
From Robert Slobins

Dale: I made an earlier comment regarding how solar eclipses are handled in the US, compared with other 'third-world' countries.

I went to Wauseon, OH for the 1994 annular. There were plenty of stories about school systems that **CONFINED** the students inside for the event, especially since the eclipse occurred at lunch time in many locations in the Midwest.

The only comparison with America is 1995 India, where the city traffic, normally very busy at holiday (Diwali) time, was at 2AM levels. Nearly everyone cowered in the houses in New Delhi on 24 October.

Compare this with the 1970 transit of Mercury. I was with six other members of the Durfee High School Astronomical So-



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## GENERAL TOPICS

ciety and we watched the transit projected onto a card by the school's 8-inch Alvan Clark objective. Our faculty advisor was not present. We survived. Not only that, we submitted the observation to S+T (July 1970 issue). Robert B Slobins  
From Hans Andrew

I saw my first sunspotter telescope at the 1991 eclipse in La Paz, Baja California Sur. I don't remember whose it was, but I copied down the information and bought myself one. The price was very reasonable--maybe 40-50 USD. These were handmade by (I think) a gentleman named Dan J. from Hawley, Pennsylvania. It came as a matte black painted open triangle, with a piece of cardboard backing that featured some information on the Sunspotter and a cut out from some sci fi magazine of aliens that might have existed on Mars. In short, it was a cool tool and had neat artwork attached. Now I realize that prices have gone up some in the last 10 years, but that Sunspotter that was mentioned at <http://www.starlab.com/ltiss.html/> is the same thing that I have just spruced up a bit.

If anyone is interested in building your own the patent has expired and if you use a patent search engine easily found on the web search for patent 4437736.

An amazing device, but worth 300 USD?--no way. Andrew Hans

From Brian Garrett

Is there any kind of legal precedent for this kind of thing? \*Has\* a school ever faced legal action because a student suffered an eye injury that, through some convoluted argument, could be connected to a solar eclipse? The Sun doesn't shine only on school grounds. If a child is told not to look directly at the sun, and looks anyway, it ought not to matter whether the instruction not to look came from a teacher, a parent, a neighbor, or whoever, or whether it occurred on a school ground or in a public park or wherever. I'm no lawyer, but AFAIK stupidity is not an actionable offense.

I'm sure you've already suggested this to school administrators such as you've mentioned, but schools that want to introduce their students to eclipses could always make up the curriculum well in advance, with plenty of safety precautions included. That way, if somebody did try to take them to court, they could prove to the court that the children were properly instructed about safe vs. unsafe ways to view the eclipse. Most bureaucrats want to take the path of least resistance, of course, so it's not surprising that most school administrators don't want to bother. Brian

From Evan Zucker

I'm afraid you're missing the point, which is understandable because we're trying to understand the bureaucratic mind, which is often a stretch.

It doesn't matter if there is any precedent, and it doesn't matter if the school would win in court. All that matters is that the school doesn't want to do anything that might result in its being sued and ending up in court. It's the expense and time of the litigation they are trying to avoid. To school administrators, that's usually far more important than providing an enhanced educational experience.

Remember: in the U.S., anybody can sue anybody for anything. Winning is something else again but often doesn't matter because defendants frequently settle to avoid the continuing expense of litigation and to eliminate the chance of a losing verdict. -- EVAN

From Donald Watrous

If a teacher took a class full of children and stood them in the median strip of a highway telling them not to walk onto the roadway and some child did and got hit, do you think a lawyer could resist suggesting that the teacher put the children in harm's way? \*If\* something did happen as the result of viewing an eclipse, you can bet there's be a lawsuit. That's what school administrators are thinking.

The US is a country where one child giving a piece of candy to another is a violation of school "no drugs" policy, playing with a water pistol (or even making a "gun" with your hand) can get you suspended from school, and saying "G'day, sport"

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## GENERAL TOPICS

to an Australian classmate is punished as racism! Don't believe me? See <http://thisistrue.com/zt.html> .

With this mindset in place, the only way to get US schoolchildren to see an eclipse is to convince a school administrator that the eclipse *\*can\** be viewed safely with an extremely low likelihood of any problems and get the children to have permission slips from parents allowing them to view the eclipse.

I'm no lawyer either, but my wife says I think like one. Is that an insult? ;^) Don

From Dale Irland

Yes that is the bottom line, common sense has nothing to do with it. Don't blame the schools entirely for their narrow attitude. It is not the unreasonable risk of injury they have to worry about but the unreasonable risk of litigation. If some mother takes her kid to the doctor 2 years after the eclipse and learns he is nearsighted, or hyperactive, or has warts, they might sue and blame it on watching the eclipse and probably be compensated. Dale

From Robert Slobins

Karl Marx was born on an eclipse day. The Indians may have something there. ;-) Robert B Slobins

From PP

>The Sunspotter and observations were written in the January Special issue 2001 (after the Xmas eclipse) at pages 20 and 21.

From Evan Zucker

Thanks a lot. I had looked through every issue back through May before I got tired of searching.

From Evan Zucker

I'm sorry I didn't make this clear, but that's exactly what I do.

In November 1999 my then-6-year-old son and I drove an hour to the mountains east of San Diego and set up my telescope behind a gas station off Interstate 8. The only problem with that is not being able to share the experience with many other people. Fortunately, a convoy of U.S. Marines happened to stop by enroute from a base near Yuma, Arizona, to Camp Pendleton, California. The young jarheads were rather surprised to see me there, but they thought the sight of Mercury crossing in front of the moon was pretty cool. -- EVAN

From Evan Zucker

Mike Simmons has pointed out that I mistakenly said "moon" instead of "sun" in my last post. I meant to say:

"The young jarheads were rather surprised to see me there, but they thought the sight of Mercury crossing in front of the sun was pretty cool."

I was probably thinking about the moon because I was telling my son tonight about the forthcoming occultation of Mars as seen from Africa. -- EVAN

From Christian Viladrich

This might be slightly off topic, but I have a look to Arthur L. Wipple optimized solar telescope with uncoated primary : <http://www.chesapeake.net/~osprey/stage3.htm>

The images he gets with his telescope are really incredible, see : <http://www.chesapeake.net/~osprey/sunspots.html> Regards, Christian Viladrich

From Chris O'Byrne

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## GENERAL TOPICS

As was Pope JPIL... Chris.

From Robert Slobins

As was Joan Rivers. (Someone please confirm.) -rbs

From Brian Garrett

Confirmed. (Source: \_The World Almanac, 2001\_ , p.358; Espenak, \_Fifty Year Canon\_, p. 25.) Brian

From Evan Zucker

According to several web sites, she was born June 8, 1933. Fred's web site does not list a solar or lunar eclipse that day.

<http://sunearth.gsfc.nasa.gov/eclipse/SEcat/SE1901-2000.html>

<http://sunearth.gsfc.nasa.gov/eclipse/LEcat/LE1901-2000.html>

From Dorje

Solar or lunar eclipses ? Who knows when he was born and when he was dead ? Dorje

From Robert Slobins

I recall her birthday as 8 June 1937. Evan, you'd better be right; putting four years on any woman above 20 can be dangerous. :-) -rbs

From Brian Garrett

I was using The World Almanac, which gives her birth date as June 8, 1937. This may or may not be her real date of birth, but there certainly was a TSE on that date. Brian

From Robert Slobins

Brian And the eclipse ran across the Pacific; the dates were 9-8 June 1937. Now, if we can get the time of birth--was she born while the lunar shadow was on the ground? -rbs

From Joseph Cali

Probably not. We are not (yet) as litigious as you folk in the USA though the legal profession is obviously trying their hardest to do it. Science is a compulsory subject at schools until the children are in the two years of high school study before university. Curriculum is not controlled by fear of law suits or religious beliefs. 90% of the population lives on the east coast where the eclipse won't be visible. I will write to Fred Espenak and see if he can move it further east;-).

One problem is that many younger children in the eclipse path don't go to regular schools because they live on remote grazing properties. They attend the School of the Air from their homes - an HF radio based school and hence have no teacher no school and no particular facilities. The eclipse passes over one of a handful of the least densely populated regions of the continent.

In answer to the problem in the USA you can do what we did in Kapini village Zambia. We took the youngest children into a school building and projected the sun's image onto a wall of the room. No risk at all.

You can read about it in the Zambia section of my website. My eclipse pages also has a little extra information about the 2002 eclipse to add to Fred's bulletin. <http://joecali.members.easyspace.com>







## GENERAL TOPICS

From Wolfgang Strickling To SEML Date 02.10.01 Re **Location on 1870 Shadow bands**

Hello all on the list, i suppose, everyone knows the famous shadow bands picture of the TSE 1870-12-22 in Sicily (if not look at <http://www.earthview.com/tutorial/effects.htm> ).

Does anyone know name or exact coordinates of the location or town, where that bulding lied and whether it showed shadow bands before or after totality? If no coordinates are known, lied it exact on the centerline or what was the distance from centerline (North/south)?

Best regards Dr. Wolfgang Strickling Dr.Strickling@gmx.de German <http://home.t-online.de/home/Dr.Strickling/astro.htm>

From Eric Flescher

I will keep digging but in the Duncan Steel book on p.274 it said it took place in Spain.

From Harvey Wasserman

I may be totally off base here, but is this an actual photograph? If I am not mistaken, 1870 pretty much predated any sort of photography with short enough exposure times to make a picture like this. If this is true, then it seems possible that this is a drawing based on experience, and may not even be a real building. Just a thought... Harvey Wasserman

From PP

On the CD-ROM Proceedings of the SEC2000 Barrie Jones writes <Figure 3 An engraving of shadow bands on an Italian house during an eclipse in 1870>.

I am travelling at the moment and can not access my eclipse library for a closer look. Best regards, Patrick

From Jim Huddle

Here's what [www.infoplease.com](http://www.infoplease.com) has to say about photography under Inventions and Discoveries:

"Photography: (first paper negative, first photograph, on metal) Joseph Nicphore Niepce, France, 1816-1827; (discovery of fixative powers of hyposulfite of soda) Sir John Herschel, England, 1819; (first direct positive image on silver plate, the daguerreotype) Louis Daguerre, based on work with Niepce, France, 1839; (first paper negative from which a number of positive prints could be made) William Talbot, England, 1841. Work of these four men, taken together, forms basis for all modern photography. (First color images) Alexandre Becquerel, Claude Niepce de Saint-Victor, France, 1848-1860; (commercial color film with three emulsion layers, Kodachrome) U.S., 1935."

And, on page 68 of their book "The Sun in Eclipse" Michael Maunder and Patrick Moore state, "The first eclipse photograph happened at a surprisingly early date, on 8 July 1842. It was made by the Italian astronomer Giovanni Alessandro Majocchi, a professor in Milan. His daguerrotype took 2 minutes to expose, and only recorded the partial phase just before totality, failing to record the corona during totality." On the next page, Maunder & Moore write that during the eclipse in Sweden and East Prussia in 1851, Berkowsky took two daguerrotypes showing the corona, using a camera with a 60-mm lens. (Is this in Patrick's Eclipse Calendar?)

So, it COULD be a real photograph. Jim Huddle

From Joseph Cali

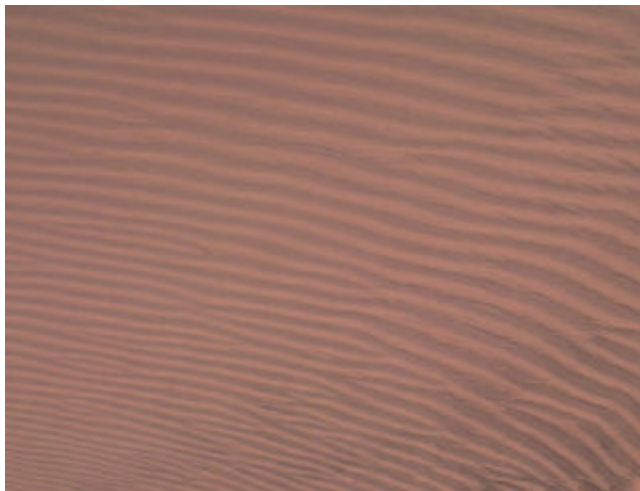
The answer lies between. It looks like an etching not a photograph. Emulsions were beginning to speed up by 1870 and the first deep sky photograph (M42) was taken in the mid 1880's. I suspect that photography of shadow bands would have been border line at this time. Joe Cali



## GENERAL TOPICS

From Jay Pasachoff

The daguerreotypes listed below were long exposures, but in the 1850s, wet plate photos came in with much shorter exposures. The first comet photo was taken of Donati in 1858, one in England with a portrait lens and one the next night at Harvard with the high focal-ratio 15" telescope. You can find details in my book "Fire in the Sky: Comets and Meteors, the Decisive Centuries, in Art and Science," by Roberta J. M. Olson and me; a paperback has now come out and is available from Cambridge University Press (or link from [www.solarcorona.com](http://www.solarcorona.com)). There is a related article in -----, Roberta J. M. Olson, and Martha L. Hazen, 1996, "The Earliest Comet Photographs: Usherwood, Bond, and Donati 1858," J. Hist. Astron. 27, 129-145.



From Eric Flescher

Sorry I should have included the rest.

That Picture is a sketch not a photo. The caption in the Steel book says " the shadow bands sketched (rather imaginatively) after an eclipse in Spain about a century ago."

I have more definitive stuff someplace

From Harvey Wasserman

Also, perhaps someone who has seen shadow bands - I have not - would comment on the realism of this depiction. I have always pictured them less regular, and also with much less contrast. Thanks, Harvey Wasserman

From Michael Gill

This image of shadow bands is certainly widely used by some of the recent textbooks on the subject of eclipses.

'Eclipse' (second edition, by Brian Brewer) reproduces it on page 34 with the following caption "Shadow bands visible just prior to totality".

'Totality - Eclipses of the Sun' reproduces it with the caption "Shadow bands on an Italian house in 1870".

'Eclipse' by Duncan Steel captions it "The shadow-band phenomenon sketched (rather imaginatively) after an eclipse in Spain about a century ago."

'Eclipse' by David and Carol Allen uses the image and their caption says "This rather idealised sketch of shadow bands on a wall was made by a Spanish observer in 1870 in the town of Terranova."

So, who is right? The track of totality at this 1870 TSE crossed the southern part of the Iberian Peninsula as well as Pantelleria, Sicily and Calabria in Italy.

Since the Allens' book specifically mentioned a town, I looked in an atlas for a place in Spain called Terranova but I drew a blank. However, I found a few towns of that name in Italy so perhaps the 'Spanish observer' mentioned in the Allens' book watched this eclipse in Italy?

I think the best candidate of all the Italian Terranovas is the one in Calabria (38 degrees 19 minutes north, 16 degrees 1

## GENERAL TOPICS

minute east, and altitude 289 metres).

These co-ordinates put the town very close to the northern limit. David Herald's program 'Occult' gives the magnitude at eclipse maximum of 0.997.

I hope this helps. Does anyone have the definitive information about where this sketch was done? Perhaps the authors of some of the above books could comment? Michael Gill.

From Eric Flescher

Hi all, I seem to remember that eventhough it said it was a "Spanish observer" that the eclipse seen was in Italy somewhere. I am still tracking my reference on this.

In my 10 Myths of eclipses presentation, I did use that shadow bands image which I did get from Brewer's book.

However the caption I used with was (but did not necessarily go with this illustration of the shadow bands on the house) "A strange flucuation of light was seen... upon the walls and ground so striking that it came place children ran after it and tried to catch, with their hands (George B. Airy, 1842, December eclipse)

Elsewhere in The eclipse quotations which I found, it lists references from a Spain eclipse of December 2, 1870 by Paul Jacob Naftel (official artist for the eclipse exp edition led by Reverend J S Perry, quoted in Paul Jacob Night by Furniss and Booth.

Many colors are mentioned as well as a town nearby called Jerez. A painting was made of the sun by this artist but there is no mention of shadow bands at all nor is there any mention of painting relating to the shadow bands.

From Fred Espenak

I am quite fortunate to have a copy of Ranyard, A.C., "Observations Made During Total Solar Eclipses" Mem. Roy. Astron. Soc., XLI, 1879. This 792+ page tome is a summary and compendium of all published eclipse observations through the late 1870's.

In a chapter on shadow bands, the infamous "shadow bands on house" drawing appears on page 53. The text says:

"The woodcut is made from a lithograph drawing by Sig. (Diamilla) Muller. In a letter accompanying the drawing, Sig. Muller says, "Le dessin ci-joint qui represente le batiment sur lequel nous voyons ces ombres donne une idee bien pale du phenomene qu'il est impossible a reproduire dans sa verite, avec ces oscillations, son tremblement, et son mouvement rapide."

Sorry but I have left all the accent marks off the above quote. Can anyone on the SEML translate this?

There is a translation of another part of Sig. Muller's letter which says:

'Just after the beginning of totality undulating shadow bands, half a meter broad, seen moving rapidly over the front of a house."

I think it's safe to say that Sig. Muller was somewhere inside the path of totality. His letter is from "Terranova" and is dated "22nd Dec., 1870."

My Rand-McNally International World Atlas has four listings for Terranova. One is in Newfoundland, two are in southern Italy (in the foot), and one is in Sicily (the town is now known as Gela).

The path of the 1870 Dec 22 total solar eclipse passed through southernmost Spain and Sicily. Terranova (Gela) would have seen a total eclipse lasting about two minutes.